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BROMBERG & SUNSTEIN LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

EXAMINER

GAMINO, CARLOS J

ART UNIT

PAPER NUMBER

4162

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,180	Applicant(s) TEH, LIP	
	Examiner CARLOS GAMINO	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 7, 9, 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/05/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the manner in which the weld is placed in claim 19 to redistribute the strain in the corner must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 2, 3, 7, 9, and 17 are objected to because of the following informalities:
the acronyms RHS, SHS and PHS need to be defined as PHS is in claim 1.
Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:
- The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 4-6, 8-10, 12, 17 and 18 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claims 1, 17 and 18 recite the limitation "the step". There is insufficient antecedent basis for this limitation in the claim.
6. Claim 4 recites the limitation "the continuous weld". There is insufficient antecedent basis for this limitation in the claim.
7. Claim 5 recites the limitation "the continuous weld". There is insufficient antecedent basis for this limitation in the claim.
8. Claim 6 recites the limitations "the continuous weld", "the connection weld bead" and "spaced weld beads". There is insufficient antecedent basis for this limitation in the claim.

9. Claim 8 recites the limitation "a spaced weld bead". This implies that there is another spaced weld bead.
10. Claim 9 recites the limitation "the first intermediate". There is insufficient antecedent basis for this limitation in the claim.
11. Claim 10 recites the limitation "that intermediate weld bead". There is insufficient antecedent basis for this limitation in the claim.
12. Claim 12 recites the limitation "the peripheral end". There is insufficient antecedent basis for this limitation in the claim. For the purpose of this examination it will be assumed that the weld beads are applied to a flange and the corners connected to the flange.
13. Claim 17 is unclear and indefinite. Neither drawings nor specifications clearly explain what this claim encompasses. For the purpose of this examination it will be assumed that the claim means that a weld is formed not just on the flange of the PHS but that it also wraps around the 2 corners adjacent to the flange and stops at a point where the next flange begins.
14. Claim 18 recites the limitation "an internal end of the weld". It is not clear as to how a weld can have an "internal end". For the purpose of this examination it will be assumed that the claim is referring to the backward bead welding technique.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-4, 15-16 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tadateru et al. (JP2002172462). '462 teaches the welding of a joint between a structural high tensile square tubular member to a diaphragm (20), by welding a flange of the pipe to the other member, figures 1-4 and 11, paragraph 0034 under Means. The structural high tensile square tubular member is cold formed steel, paragraphs 0006-0008. The weld beads are applied transversely across the face of the weld groove to fill it in and then on surface of the flange in the range of 5mm to 15mm, which will be referred to as the **buildup**. The range being defined as the distance from the toe of the cap weld to the toe of the surface weld on the flange. This is done to help prevent cracks in the weldment where cracks are prone to happen, see abstract. (The information not obtained from the abstract was obtained from a machine translation at the JPO website.)

17. Regarding claim 1, '462 clearly shows a weld extending from the connection weld to a remote location.

18. Regarding claims 2-4, '462 clearly states that the welding is done on a square tube, which has 4 flanges, and a weld is applied across the surface of at least one flange.

19. Regarding claim 15, '462 clearly states that the square tube is welded to a diaphragm, see figure 11.

20. Regarding claim 16, a bending moment "can be" applied to any joint which then inherently transfers the stress to both members. Therefore, the joint of '462 meets this limitation.

21. Regarding claims 19-20, '462 refers to the problem of welding cold-formed steel and proposes a solution to this. Therefore, meeting the limitations of this claim.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 5-7, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadateru et al. (JP2002172462) as applied to claim 1 above.

24. What is not specifically disclosed but is inherent to the method of joint design is the number of passes required to fill the gap and the minimum or maximum size of the weld beads that can be reasonably achieved. In a typical weldment there is a "connection weld" which is typically called the **root pass**. Any additional weld beads or intermediate weld beads are called **filler passes**. The top pass on a groove weld is called the **cap pass**. Any weld beads done outside the groove weld are called **buildup**. Not all welds contain all of these elements due to the size of the weld being created. A typical GMAW weld bead width can range anywhere from 3mm to 12mm depending on numerous variables; electrode size, power input, weld speed, technique and so on. So

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if a reasonable weld bead size of 5mm is used to make the buildup pass at a width of 15mm, that would be 3 weld beads, 2 intermediate weld beads and 1 spaced weld bead. Take the root pass and any subsequent filler passes if needed and the total weld could be 30mm. However, this number can vary widely depending on the size of the weld beads and the thickness of the pipe being welded. Once again this comes back to the method of joint design and is very case dependent. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose the applicant's welding parameters based on the materials being joined to achieve the desired weld profile.

25. The examiner would like to point out that **buildup** inherently makes the area where it is placed stronger by the mere fact that there is more material in that area. So if there is more material in an area it would be inherently more difficult to break.

26. The examiner would also like to point out that by simply applying a weld at a connection the "rotation capacity" of that joint would increase. Also applying more weld metal would further increase the "rotation capacity" as is done by '462.

27. Regarding claim 5, from the explanation above '462 does have more than one weld bead on the surface of the flange. Therefore inherently meeting this limitation.

28. Regarding claim 6, from the explanation above it can be seen that the root pass (connection weld) and is followed by filler passes (intermediate passes), which is in turn followed by the buildup passes (surface weld beads or additional intermediate passes), and finally ending with a weld bead (spaced weld bead). Therefore inherently meeting this limitation.

29. Regarding claim 7, it is well known in the art to apply buildup where the additional support for stresses is needed most and that applying buildup everywhere is very expensive and time consuming. '462 applied the buildup where cracking was the most prone therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply buildup to the flange that is most likely to crack and not to the others to save time and money.

30. Regarding claim 10, from the explanation above the limitation of the "additional weld bead" is technically a filler pass. '462 meets this limitation. The examiner would also like to point out that the number of filler passes depends on numerous factors and is usually necessary to provide the weld joint with sufficient strength.

31. Claims 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadateru et al. (JP2002172462) as applied to claims 10 and 6 above, respectively. '462 does not teach a weld bead having a .5 thickness of the flange. However, '462 does not limit the thickness of the tube that this method can be performed on. In the specification the applicant states that the tube thickness is 4-5 mm. One of ordinary skill in the art at the time of the invention would know that with the applicant's disclosed welding parameters that a 2-3 mm thick weld bead is typical of the process and that the amount of weld that can be deposited in a single pass would most likely be limited by the burn through on the pipe. This is a matter of joint design and maximum thickness of a weld bead can be determined by variables such as the thickness of the material being welded, the heat input, the process being used, desired microstructure or others.

Therefore, if the method of '462 were to be performed on 4-5 mm tubular members to

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decrease the weldment's cracking susceptibility it would have been obvious to one of ordinary skill in the art of joint design at the time of the invention to have used a weld with a thickness of 2-3 mm or thicker to speed up the welding process but to limit the thickness of the weld beads to avoid defects from oversized weld beads such as burn through. Furthermore, the examiner would like the applicant to point out where in the specification the limitations of claims 11 and 14 are addressed.

32. Regarding claim 13, from the explanation above '462 applies a weld bead that can range from 10-30 mm. The size of the weld is dependent on the type of members joint and one of ordinary skill in the art at the time of invention would have designed the size of the weld depending on the these factors.

33. Claims 8, 9 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Tadateru et al. (JP2002172462) in further view of Linnert. What '462 does not teach is the forward or backward welding and their effects. Linnert teaches that in a multipass weld each weld bead tempers the previous weld bead and HAZ and that this tempering makes the weld bead and HAZ tougher. So it is not unexpected that the backward welding technique is better because the spaced weld in this case would be tempered. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to place the spaced weld bead first so that it would be tempered which would reduce the susceptibility of that region to cracking. Claim 18 is included in this rejection for the reason stated in paragraph 14 above.

34. Claims 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadateru et al. (JP2002172462). (These claims are being rejected on the

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interpretations as listed above in paragraphs, 12 and 13.) '462 does not specifically teach how much of the circumference of the tube receives the weld. It is well known in the art that the more of the circumference of a weld joint that is welded the stronger the joint will become, which goes back to joint design. The length of the joint that is welded can depend on money, stresses involved, material or the design of the structure. Sometimes a complete circumferential weld is overkill and only 2 flanges need to be welded or maybe 30 cm of total weld of a 40 cm diameter tube need be welded for sufficient strength. It would have been obvious to one of ordinary skill in the art at the time of the invention to wrap the weld around the corners of a flange or partial up another flange if that would provide sufficient strength, save time and/or money.

Conclusion

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 5,050, 385 teaches build up to prevent cracks.
- US 5,233,149 teaches reinforcement of a fillet weld.
- US 5,362,935 teaches joint design.
- JP 53129136 A teaches using a weld as reinforcement.
- JP 54097555 A teaches using a weld as reinforcement.
- JP 55061392 A teaches using a weld as reinforcement.
- JP 56134067 A teaches reinforcement of a fillet weld.

- Structural Welding Code – Steel teaches vast amounts of joint design, older versions exist with virtually the same material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS GAMINO whose telephone number is (571) 270-5826. The examiner can normally be reached on Monday-Thursday, 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer C. McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CG
/Jennifer McNeil/
Supervisory Patent Examiner, Art Unit 4162